Open Automated Demand Response Standards and Commercialization: Bringing Technology from Laboratory to Market

The Lawrence Berkeley National Laboratory's Demand Response Research Center (DRRC) worked with California and the nation to develop an open communications specification to automate demand response (DR), known as Open Automated Demand Response, or as OpenADR. OpenADR facilitates reliable and cost-effective automation of both electricity price and electric grid reliability signals for demand response.

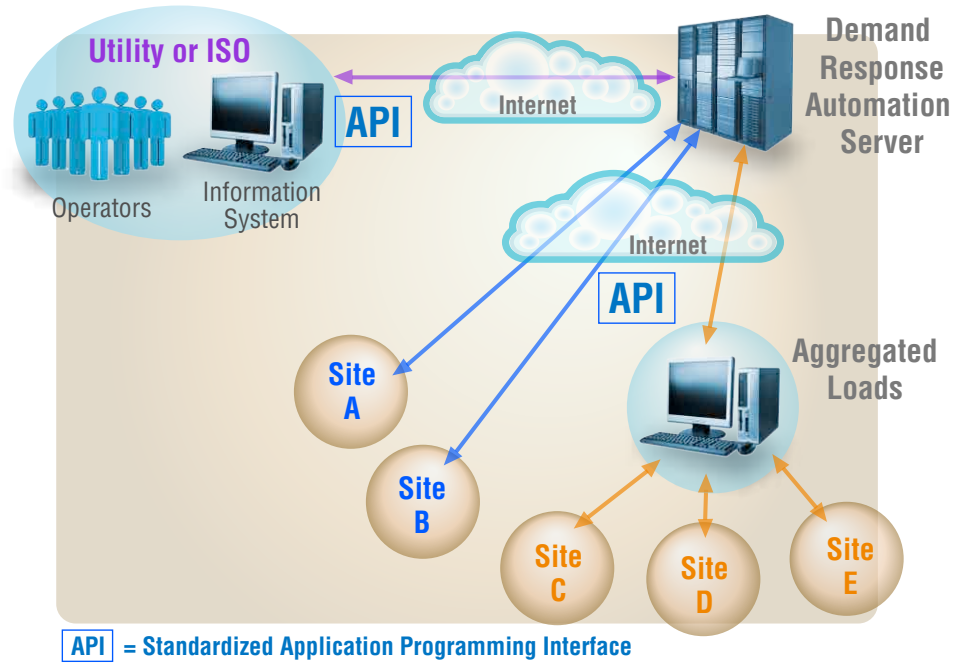

Figure 1. Standardized OpenADR communications between electricity service providers and consumers

Demand response (DR) is a set of actions taken to reduce electric loads when systems wide grid contingencies occur that threaten the supply demand balance or market conditions occur that raise electricity costs. Automating demand response allows facility managers to pre-set their response using existing control systems, providing electricity cost savings with minimal effort. The LBNL DRRC worked with California and the nation to develop an open communications specification to automate DR, known as Open Automated Demand Response, or as OpenADR. OpenADR facilitates reliable and cost-effective automation of both electricity price and system grid reliability signals for demand response (DR).

After seven years of development the OpenADR specfication was published in April 2009. In May 2010 OpenADR became one of the first 16 Smart Grid Standards supported by the U.S. Department of Energy tbe the National Institute of Standards and Technology Smart Grid Interoperability Standards effort.

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Benefits

OpenADR provides a non-proprietary, open standardized DR interface that allows electricity providers to communicate DR signals directly to existing customers using a common language and existing communications such as the Internet.

Open standards lower to cost of technology and allow control companies to embed the communication system in their controls for minimal cost. This low cost automation allows consumers to use less expensive high price power providing benefits to consumers, utilities, system operators, and society at large.

The OpenADR offers many benefits to communicate DR signals that enables consumer choice and interoperability among control equipment and new energy markets.

The advancement of OpenADR from Laboratory to Market is categorized by three major developments:

1. OpenADR Standardization: The advancement of OpenADR with a standards development organization began by donating the specification to the Organization for Advancement of Structured Information Standards (http://www.oasis-open.org/) and the Utilities Communication Architecture International Users Group (http://www.ucaiug.org/). LBNL works with these organizations and groups to standardize OpenADR for wider use by the public and the market.

2. OpenADR Commercialization: OpenADR is commercially available and used in numerous utility DR programs and is used in pilots and demonstrations in national and international markets for commercial, industrial, and residential sectors.

3. OpenADR to Market: To facilitate dissemination of OpenADR the OpenADR Alliance was formed (www.openadr.org). The OpenADR Alliance fosters the development, adoption, and compliance of the OpenADR standards through collaboration, education, training, testing, and certification.

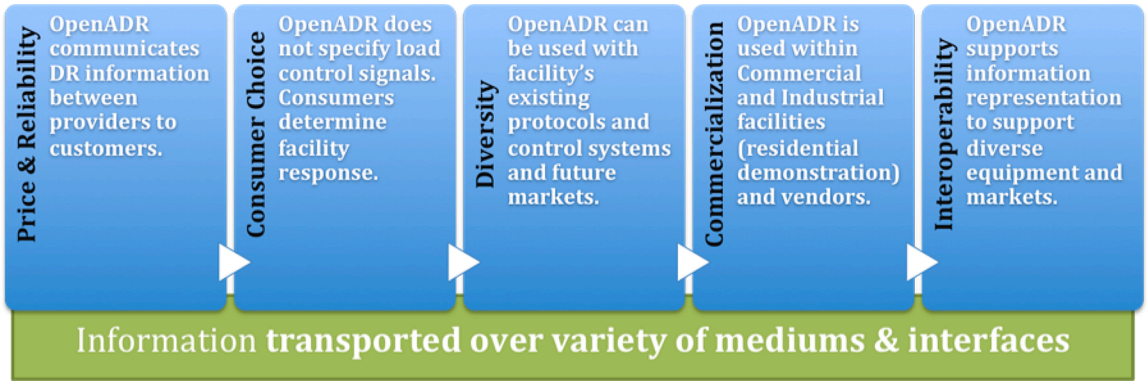

Figure 2. OpenADR benefits to electricity service providers and consumers

Related Links:

OpenADR Website: http://openadr.lbl.gov
Demand Response Research Center and Publications: http://drrc.lbl.gov/drrc-pubs.html
Organization for Advancement of Structured Information Standards: http://www.oasis-open.org/
Utilities Communication Architecture International Users Group: http://www.ucaiug.org/

Key OpenADR Articles and Materials:

http://newscenter.lbl.gov/press-releases/2009/04/27/openadr-specification/
http://www.lbl.gov/Science-Articles/Archive/sabl/2008/Feb/ADR.html/
http://drrc.lbl.gov/pubs/Info-OpenADR-Honeywell.pdf/

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